AMENDMENTS TO THE CLAIMS

1. (currently amended) An image correction method comprising:

obtaining expected signals for an image-rendering device of each of a plurality of known reference colors;

obtaining ~~reference outputs~~ detected signals from an image sensor using a color image array, said ~~reference outputs~~ detected signals being ~~indicative of outputs~~ obtained for [[a]] said plurality of known reference colors, said plurality of known reference colors including white, at least three primary colors, and at least two other non-primary colors;

determining an error measure for each of said plurality of known reference colors, said error measure representing a difference between said ~~reference outputs~~ detected signals and ~~what would be~~ said expected signals for each of said reference colors ~~outputs~~;

obtaining a ~~single,~~ color correction matrix~~, the matrix being obtained~~ by simultaneously minimizing each said respective error measure to obtain optimum overall correction for said plurality of known reference colors~~, including white~~; and

applying said color correction matrix to an input image obtained using said image sensor with said color image array to provide color correction ~~and white balance~~ for each of said plurality of known reference colors to obtain a color-corrected ~~and white-balanced~~ image from said input image.

2. (canceled)

3. (previously presented) A method as in claim 15 wherein said color correction method comprises obtaining, for each of the plurality of known reference colors,

$$(Gn' \text{ [what expect to see]} - G_c \text{ [actual] })^2 \cdot W_i = G_E$$

$$(Rn' - R_c)^2 \cdot W_i = R_E$$

$$(Bn' - B_c)^2 \cdot W_i = B_E$$

where Gn', Rn' and Bn' are expected color values, G_c, R_c and B_c are actual color values, and W_i is a weighting factor for each of colors i, i varying from 1-j colors, and minimizing G_E, R_E, and B_E for each of the plurality of colors.

4. (previously presented) A method as in claim 1 wherein there are at least seven reference colors.

5. (previously presented) A method as in claim 1 wherein there are twenty-four reference colors.

6. (currently amended) An image sensor apparatus, comprising:

an image-rendering device;

an image sensor device, operating using a color filter array which provides color filtering such that colors transmitted to each pixel of a color image array of said image sensor device are ~~measured to determine~~ converted to signals for all color

components ~~that actually impinge on an area of said pixel~~ provided by said color filtering; and

an image processor~~, operating~~ arranged and configured to color-correct images obtained by said image sensor device according to a ~~single,~~ color correction matrix~~, the color correction matrix having been~~ obtained by simultaneously minimizing respective error measures, each said error measure representing a difference between ~~a reference output~~ signals seen for a known reference color from [[a]] said color image array of said image sensor device and signals ~~what would be~~ expected to be seen for said reference ~~output~~ color, said color correction matrix being obtained according to at least the color white, three primary colors, and at least two additional non-primary colors.

7. (currently amended) An apparatus as in claim 6 wherein said image processor is configured and arranged to obtain said color correction matrix is according to at least three primary colors, the color white, and at least three colors other than said three primary colors and white.

8. (currently amended) An apparatus as in claim 6 wherein said color correction matrix according to ~~is based on~~ ~~a total of~~ twenty-four colors.

9. (previously presented) An apparatus as in claim 6 wherein said color correction matrix operates according to

$$(G_{n}' \text{ [what expect to see]} - G_{c} \text{ [actual]})^{2} \cdot W_{i} = G_{E}$$

$$(Rn' - R_c)^2 \cdot W_i = R_E$$

$$(Bn' - B_c)^2 \cdot W_i = B_E$$

where Gn', Rn' and Bn' are expected color values, G_c, R_c and B_c are actual color values, and W_i is a weighting factor for each of colors i, i varying from 1-j colors, and G_E, R_E, and B_E are minimized for each of the plurality of colors.

10. (canceled)

11. (previously presented) An apparatus as in claim 9 wherein red, green, and blue are weighted higher than other colors.

12. (previously presented) An apparatus as in claim 6 wherein said color correction matrix is obtained according to all colors of a chromaticity chart.

13. (currently amended) A method of correcting an image from an image sensor including a color image array having a plurality of pixels, comprising:

obtaining signals expected to be seen for each of a plurality of known reference colors;

~~dividing the image sensor into a plurality of pixels;~~

~~placing color separators over said plurality of pixels, such that each pixel receives incoming light that is filtered to emphasize one color component; and~~

obtaining a color correction matrix for said pixels, said color correction matrix being one which takes into account correction ~~of incoming radiation~~ for at least the color white, three primary colors, and two other non-primary colors by simultaneously minimizing error measures relative to each color, wherein respective error measures for said non-primary colors are weighted such that said correction matrix corrects for some of said non-primary colors more than said primary colors, each error measure representing a difference between signals actually seen ~~a reference output~~ for a known reference color from [[a]] said color image array and ~~what would be~~ said signals expected to be seen for each of said reference outputs; and

applying said color correction matrix to obtain a subjectively color-corrected and white-balanced image directly from an input image obtained using said color image array.

14. (canceled)

15. (previously presented) A method as in claim 1, further comprising the step of applying a weight factor to each said error measure for each of said plurality of known reference colors to obtain a respective weighted error measure for each of said plurality of known reference colors.

16. (previously presented) A method as in claim 15, wherein higher weight factors are applied to colors including at least one of red, green, blue, human skin elements, and gray scale elements than to other colors.

17. (previously presented) An apparatus as in claim 9, wherein simultaneous equations are used to minimize G_E, R_E, and B_E for each of the plurality of colors.

18. (previously presented) An apparatus as in claim 6, wherein said color correction matrix has an error measure for some colors weighted more than an error measure for other colors.

Claims 19-20. (canceled)

21. (previously presented) A method as in claim 15, wherein said weight factor is assigned to a respective color based on impact on subjective image quality.

22. (previously presented) An apparatus as in claim 9, wherein said weighting factors W_i are assigned to a respective color based on impact on subjective image quality.

23. (new) A method as in claim 1 wherein the detected signals are obtained for each of a plurality of color channels of said image sensor.

24. (new) A method as in claim 13 wherein the detected signals are obtained for each of a plurality of color channels of said color image array.